THEORETICAL STUDY OF ThO AND HfF^+ FOR ELECTRON ELECTRIC DIPOLE MOMENT SEARCH EXPERIMENTS

ALEXANDER PETROV[a], LEONID SKRIPNIKOV[b], ANATOLY TITOV, *Division of Innovations, NRC "Kurchatov Institute" PNPI, Gatchina, Leningrad region, Russia*.

Theoretical study of ThO and HfF^+ for the experiments to search for the electron electric dipole moment (eEDM) are reported. The g-factors [1,2], effective electric field in the molecule acting on the eEDM [3], hyperfine structure, Zeeman and Stark effects [3,4,5] (including dynamic) for the eEDM sensitive $^3\Delta_1$ states are calculated with high accuracy. Calculations are required for interpretation of the experiments and estimation of systematic effects.

1. A.N. Petrov, L.V. Skripnikov, A.V. Titov, N.R. Hutzler, P.W. Hess, B.R. O'Leary, B. Spaun, D. DeMille, G. Gabrielse, and J.M. Doyle, Phys.Rev.A **89**, 062505 (2014)
2. A. N. Petrov, L. V. Skripnikov, and A. V. Titov, Phys. Rev. A **96**, 022508 (2017)
3. A.N. Petrov, Phys.Rev.A, **91**, 062509 (2015)
4. A. N. Petrov, Phys. Rev. A **95**, 062501 (2017)
5. A.N. Petrov, Phys.Rev.A, **97**, 052504 (2018)

[a] Also at Division of Quantum Mechanics, St. Petersburg State University, Russia
[b] Also at Division of Quantum Mechanics, St. Petersburg State University, Russia